UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/932,127	08/16/2001	Joseph C. Chan	50R4781	4319

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ROGITZ & ASSOCIATES
750 B STREET
SUITE 3120
SAN DIEGO, CA 92101

EXAMINER
LEE, RICHARD J

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 12/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/932,127	CHAN, JOSEPH C.
	Examiner	Art Unit
	Richard Lee	2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _27 July 2004_.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-26_ is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _9 and 10_ is/are allowed.

6)☒ Claim(s) _1-8 and 11-25_ is/are rejected.

7)☒ Claim(s) _26_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
   application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

2.   Claims 1-3, 5-8, 11-14, and 17-25 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Brailean et al of record (5,724,369) in view of Zhao et al of record (US

2003/0067981 A1).

        Brailean et al discloses a method and device for concealment and containment of errors in

a macroblock based video coded as shown in Figures 3, 4, and 6, and substantially the same

method for concealing errors in texture partition of a video packet, error concealment system for

texture partition of a video packet, and computer readable medium containing executable

instructions which, when executed in a processing system, causes the system to conceal errors in

texture partition of a video packet as claimed in claims 1-3, 5-8, 11-14, and 17-25, comprising

substantially the same error location detector (i.e., 314 of Figure 6, and see column 5, lines 1-20,

column 6, lines 25-47) to receive video packets, and determine a particular macroblock within

the texture partition where error is detected, and determining a particular location within the

texture partition where error is detected; an error concealment element (i.e., 316 of Figure 3, 620

of Figure 6, and see column 5, lines 21-39, column 7, lines 9-65) to conceal the error starting at

the particular macroblock, and to conceal the error in texture data starting at the particular

location; an image smoothness evaluator (i.e., MSE of macroblocks, see column 7, line 41 to

column 8, line 6) to evaluate the concealed macroblocks, and evaluating image smoothness of

the concealed texture data; repeating the concealing and evaluating with one more macroblock

added prior to the previous particular macroblock/location, the repeating done until all

macroblocks/texture data units in the texture partition have been concealed (i.e., errors within the

video sequence are concealed, which includes the previous error detected macroblock, and any

subsequent error detected macroblocks, see column 3, lines 25-32, and MSE of macroblocks,

column 7, line 41 to column 8, line 6); storing all decoded macroblocks of texture data in the

texture partition up to the particular macroblock (i.e., 618 of Figure 6, and see column 7, line 41

to column 8, line 6); the concealing the error starting at the particular macroblock includes

performing motion compensated temporal replacements of macroblocks starting at the particular

macroblock (i.e., as provided by 608 of Figure 6); the evaluating image smoothness of concealed

macroblocks includes computing smoothness of macroblock boundaries, wherein the smoothness

of macroblock boundaries is measured by summing pixel value mismatches between macroblock

boundary pixels, wherein the summing pixel mismatches includes storing partial mismatch

values, wherein the summing pixel value mismatches includes summing squares of the pixel

value differences (i.e., calculating MSE for macroblock boundaries, see column 7, line 23 to

column 8, line 6); wherein the pixel value mismatches are computed by reusing the partial

mismatch values from previous iterations (i.e., the same MSE mismatch equation (2) at column

7, line 56 is used from frame to frame, thereby providing the computation by reusing the partial

mismatch values from previous iterations); detecting the error in the video packet (i.e., as

provided by 314 of Figure 6), the detecting includes detecting invalid variable length code and

inconsistent resynchronization header information (see column 5, lines 21-39, column 6, lines

25-47); and selecting a set of macroblocks includes recovering some of the stored decoded

macroblocks, wherein the some of the stored decoded macroblocks include decoded macroblocks

up to a macroblock that produced the best image smoothness (i.e., as provided by 350 of Figure 3 and 618 of Figure 6, see column 5, lines 21-39, column 7, line 23 to column 8, line 6).

Brailean et al does not particular disclose, though, a selector to select a set of macroblocks/texture data units, including a combination of decoded and concealed macroblocks/texture data units, that produces best image smoothness as claimed in claims 1, 19, 21, and 24. However, Zhao et al discloses a system and method for performing bit rate allocation for a video data stream, and teaches the conventional use of a combination of features for concealing errors in a video packet, such as a combination of decoded and concealed macroblocks/texture data unit that produces best image smoothness (i.e., replacing the unrecoverable macroblock with a corresponding macroblock from a previous frame and temporal concealment, see sections [0172] and [0174] of page 13). Therefore, it would have been obvious to one of ordinary skill in the art, having the Brailean et al and Zhao et al references in front of him/her and the general knowledge of video error concealment techniques, would have had no difficulty in providing the combination of decoded and concealed macroblocks/texture data units that produces best image smoothness as taught by Zhao et al as part of the error concealment technique within the video decoder as shown in Figure 6 of Brailean et al for the same well known concealment of video errors with a combination of features in order to produce the best image purposes as claimed.

3.   Claims 4, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Brailean et al and Zhao et al as applied to claims 1-3, 5-8, 11-14, and 17-25 in the above

paragraph (2), and further in view of Talluri et al of record (6,111,916).

The combination of Brailean et al and Zhao et al discloses substantially the same method

for concealing errors in texture partition of a video packet, error concealment system for texture

partition of a video packet, and computer readable medium as above, but does not particularly

disclose performing motion compensated temporal replacements is done for those macroblocks

whose motion vectors have changed; wherein the detecting includes detecting receipt of out-of-

range motion vectors; and wherein the detecting includes DCT coefficient counts greater than a

predetermined amount of approximately 64 pixels for a macroblock and Y/Cr/Cb pixel values

out of range as claimed in claims 4, 15, and 16. However, Talluri et al discloses an error resilient

encoding and teaches the conventional detection of out of range motion vectors and DCT errors

(see column 3, lines 45-56, column 7, lines 18-52). And, in the event that motion vector error is

detected as taught by Talluri et al, it is considered obvious that the particular motion

compensated temporal replacements for macroblocks as disclosed in both Brailean et al and

Zhao et al (see 608 of Figure 6 of Brailean et al and section [0172] at page 13 of Zhao et al) may

certainly be provided as the desired error concealment technique. Therefore, it would have been

obvious to one of ordinary skill in the art, having the Brailean et al, Zhao et al, and Talluri et al

references in front of him/her and the general knowledge of error detections within video

coders/decoders, would have had no difficulty in providing the error detecting of motion vectors

and DCT coefficients as taught by Talluri et al as part of the error detection process within the

combination of Brailean et al and Zhao et al so that error concealment may further be provided to conceal the detected errors purposes as claimed.

4.   Claim 26 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5.   Claims 9 and 10 are allowed.

6.   Regarding the applicant's arguments at pages 1-3 of the amendment filed July 27, 2004 concerning in general that "... the proposed combination of references would not arrive at, e.g., Claim 1, which requires evaluating smoothness of error concealment starting at a particular macroblock, then successively adding one macroblock at a time, evaluating ... There is no iterative concealment and evaluation in Brailean, much less the agglomerative evaluation of different groups of macroblocks ... Brailean et al simply does not teach or suggest evaluating image smoothness for successive groups of macroblocks, with each group having one more macroblock added to it from the previous group, until all groups have been evaluated and the best one chosen. The secondary reference is even further afield, since all Zhao et al does is replace an erroneous macroblock with a macroblock from a previous frame ... Selecting one of several motion vectors and then undertaking a single error concealment using that vector is not close to concealing an error at a particular macroblock where error is detected, and then repeating with one or more macroblock added prior to the previous particular macroblock until all macroblocks in the texture partition have been concealed, with the best macroblocks being selected at the end of the iterative process for concealment ...", the Examiner respectfully disagrees. It is submitted again that since Brailean et al provides the concealment of all errors

within the video sequence, which includes the previous error detected macroblock and any

subsequent error detected macroblocks, with MSE of macroblocks (see column 3, lines 25-32,

column 7, line 41 to column 8, line 6), Brailean et al meets the claimed features of repeating the

concealing and evaluating with one more macroblock added prior to the previous particular

macroblock/location, the repeating done until all macroblocks/texture data units in the texture

partition have been concealed. The applicant's attention is further directed to column 7, line 9 to

column 8, line 6 of Brailean et al where it is taught that the error concealment process as

provided by concealment controller 620 involves evaluating candidate motion vectors from

macroblocks one row directly above, directly below, to the left, and to the right of the

macroblock under consideration, as well as the macroblock of the same location in the previous

frame and the zero motion vector. Then, each candidate motion vector is used to obtain a

prediction macroblock, which prediction macroblock is tested based on spatial location and

boundary comparisons (i.e., evaluating image smoothness) by calculating a MSE to provide the

best match along the boundaries. It is submitted that such error concealment process of Brailean

et al nevertheless meets the claimed features of evaluating image smoothness and repeating the

concealing and evaluating steps shown in claim 1. The combination of Brailean et al and Zhao et

al therefore renders obvious the claimed invention for the above reasons.

7.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

8.   Any response to this final action should be mailed to:

> Box AF
> > Commissioner of Patents and Trademarks
> > Washington, D.C. 20231

or faxed to:

> > (703) 308-9051, (for formal communications; please mark "EXPEDITED
> > PROCEDURE") (for informal or draft communications, please label
> > "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal
Drive, Arlington. VA., Sixth Floor (Receptionist).

9.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Lee whose telephone number is (703) 308-6612. The Examiner can normally be reached on Monday to Friday from 8:00 a.m. to 5:30 p.m, with alternate Fridays off.

          Any inquiry of a general nature or relating to the status of this application should be directed to the Group customer service whose telephone number is (703) 306-0377.

RICHARD LEE
PRIMARY EXAMINER

Richard Lee/rl

12/20/04